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Urban AI depends: the need for (wider) urban strategies

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The Southern Brazilian city of Curitiba is well-known for a series of innovative projects that during the end of the 20th Century affirmed it as one of the exemplars of planning and transport innovation in the Global South and beyond. Jaime Lerner was the architect and urbanist turned-mayor, responsible for several of those projects. Lerner recalled that, when designing and testing the revolutionary Bus Rapid Transport (BRT) system, an issue arose on ensuring a perfect alignment between buses and the tube-shaped stops. Many 'complex and costly solutions' had been considered, including digitally-assisted ones. Then the bus drivers themselves were consulted, and suggested a low-tech way of simply making two marks – one on the bus's window and the other on the station – and aligning them. This provided a system that has kept working for many years, with no accidents.

This does not have to be a story about civic administrators, transport engineers or urban designers being better off with a luddite attitude towards urban technology. But it is one of the many examples that show how the 'urban' is just not reducible to a videogame. It is complex, physical as well informational, messy and surprising, with urban intelligence, wisdom, and agency, to be found in many different places.

Architectural debates for example have led onto reflections on the dependency of spatial design on many non-architectural aspects, factors and agents, in the real world, and that architects would be much more positively influential if they abandoned pretences of purity and standalone autonomy for both themselves and their discipline. So, what about AI-powered smart urbanism? Well, it depends...

HOW WE DESIGN CITY'S PLACES

October 2019. Here I am in Suzhou, a medium-sized Chinese city, which in European terms is a rather large one. Whilst visiting one of the local universities, I have been asked to participate in an urban design and planning meeting, to discuss plans for a new neighbourhood to be developed near the high-speed railway. Public authority and professional people are there, together with a major global planning consultancy. The proposed masterplan mirrors much of what I have already seen on the ground: large tower buildings, separated by non-descript park-like public space that buffers streets and roads further from residential life. A relatively high degree of functional zoning amplifies distances, under an assumption that people will drive just about everywhere. As I write about smart urbanism, my host assumes that my view will focus on how to digitally make this part of the city smarter and more efficient, e.g., avoiding traffic jams, excessive pollution and so on. But design, planning, morphology itself, are the culprit here, as there is no point in 'breaking' the city with poor design and then 'fixing' it with digital systems. Urban design is not a neutral 'pedestal' onto which to apply sensors, devices, code that give it a function. It counts in itself, and can generate radically different needs, roles and meanings for the 'digital' component of the urban. If urban AI and smart needs to be developed to overcome and fix deficiencies, which are being generated at the same

time in designing space, then something is not so smart after all. So, a focus on the actual 'urban' questions is necessary. Marteen Hajer, chief curator of the 2016 Rotterdam Architecture Biennale, had critiqued smart technology approaches to solutions looking for problems. If these two dimensions participate within an overall effort to design and 'programme' better places, not devices, then they will augment each other and produce not a simplistic 'solution', but an actual evolution.

HOW WE SHAPE CIVIC VISIONS AND POLICIES

If civic design can generate what fundamentally are the wrong reasons to consider and shape urban AI, something somehow opposite can also happen in the relationship, where sensitive civic designs and policies enhance and give sense to urban AI's potential. Fabio Duarte and Carlo Ratti have considered and reviewed a series of possible urban impacts out of the adoption and diffusion of autonomous vehicles (AVs) (Duarte and Ratti, 2018). In their review, scenarios of urban re-shaping through the rise of AVs are imagined, and presented as potentially having major impacts in the relationship between the city and car-based mobility. Whilst positive new visions are considered, ranging from fewer cars on the streets, reduced needs for parking spaces and even a possible reversal of urban sprawl tendencies, the authors are compelled to pose conditions. These conditions are non-technological, and stem from affirming specific visions for the city – and of how people move – and the consequent application of specific strong policies. Autonomous vehicles can therefore become transformative not simply because of their 'intelligence' but as a complement to visions of public or semi-public transport through car-sharing becoming the norm as opposed to individual ownership; or urban, city-centre life being incentivised through civic design aimed at maximising sociability and professional and cultural exchange. Urban AI therefore rather than being a standalone game changer, seems to participate in specific visions, with its role highly dependent on these.

HOW WE 'EMBED' PEOPLE'S AGENCY IN URBAN AI

The bus drivers in our BRT Curitiba story were able to propose and enact a small but meaningful change to a key transport system. They could 'hack' it with a low-tech idea that worked, and could do this because – in that situation – they had been given agency to participate with ideas and practice in shaping the system. People's energy, wisdom and creativity are key assets for the city. Much has been discussed on the role of citizens in the smart, AI-driven city. One of the main critiques has revolved on the nature of people's participation in self-regulating and increasingly automatized urban spaces. Cardullo for instance argues that 'citizens' civic engagement in the 'smart city' is rather limited, and often in the form of a participant, tester, or player who provides feedback or suggestions; rather than taking on more active and deliberative roles such as a proposer, co-creator, decision maker or leader' (2021; 59). In the 'analogue' physical city, whilst it is far from guaranteed or easy to do, it is possible to claim agency. From the 'hacking' of street space with 'parklets', to the existence and constant evolution of *barrios* and *favelas* in global South cities, spatial agency means that the city can be challenged and appropriated. However, the 'digital' city might not be so hackable, or if it is, it might be for only few specific, expert people. We might think that urban AI will simplify and improve urban life and participation, but would this come at the expense of local empowerment, and lateral thinking and action? Urban AI is shaped by aligning it – whether designers are aware or not – with very different perspective on how urban life can embed people at different levels of empowerment. It does not stand on its own.

URBAN AI AS A KEY PLAYER IN HOLISTIC PLACE STRATEGIES

Let us go back for a moment to autonomous vehicles. What can happen if their functions are considered and designed in isolation, looking at optimising how the vehicles work, but overlooking those dependencies on physical place, civic visions and citizens' agency? Adam Millard-Ball notes that they could behave in a rather anti-urban way. 'At high levels of automation, AVs have no need to park close to their destination, or even to park at all. (...) AVs can behave strategically in order to minimize the costs to their passengers or fleet owners, primarily through seeking out and creating their own traffic congestion through choosing to circle on streets where they can drive the most slowly' (Millard-Ball, 2019; 99).

Such observations are very much a XXI century update of what in the 1970s urban designers defined as the risk of promoting civic 'false syntaxes'. These were seen as the result of narrow visions for the development of a civic aspect, detached from wider and more comprehensive perspectives. Self-driving cars were not on the urban design menu then, but transport engineering already made a good example of a partial approach. Whilst good and proactive road engineering aimed at promoting the fast and efficient moving of vehicles, it entirely overlooked the wider and more holistic consequences of this. Amongst the impact of over-zealous road engineering were civic motorways destroying the urban fabric, people-less towering car park buildings in prime locations, and pedestrians getting caged by rail-delimited pavements.

To avoid pushing false syntaxes, with results that might work for a specific purpose, but ultimately damage the city, urban AI development should be part of a wider strategy of civic development, and not just an add-on or a fix. This means designing AI in connection and dialogue with many other non-AI factors, and with a view of its role as part of a more holistic plan. This in turn can also mean designing AI in context. As the same building or piece of architecture will not play the same role in radically different places, so might AI.

The paradigms informing our vision of what an urban environment is or can be are key to how we then try to shape it. They determine what elements participate in that vision, and their inter-dependencies. Modernist planners and architects related the city with the idea of a rationalised machine. Urbanists Jane Jacobs and Jan Gehl, amongst others, critiqued such approach by bringing the messiness, randomness and richness of 'life' back to the foreground. Shannon Mattern has updated this critique rejecting analogies – too often put forward – between cities and computer systems. The city is not AI, but it can embed it within wider strategies to improve place. And AI should depend on these.

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